

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
6 May 2005 (06.05.2005)

PCT

(10) International Publication Number  
**WO 2005/040782 A1**

(51) International Patent Classification<sup>7</sup>: **G01N 27/26**,  
27/447

(21) International Application Number:  
PCT/US2004/035466

(22) International Filing Date: 25 October 2004 (25.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/513,533 24 October 2003 (24.10.2003) US

(71) Applicant (for all designated States except US): **THE TEXAS A & M UNIVERSITY SYSTEM** [US/US];  
3369 TAMU, College Station, TX 77843-3369 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **VIGH, Gyula**  
[—/US]; College Station, TX 77840 (US). **LIM, Peniel**  
[—/US]; 801 Spring Loop #1703, College Station, TX  
77840 (US).

(74) Agents: **BALTAZAR, David, J. et al.**; Morgan Lewis &  
Bockius LLP, 1111 Pennsylvania Avenue, NW, Washing-  
ton, DC 20004 (US).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: **ELECTROPHORESIS APPARATUS**

(57) Abstract: An electrophoresis apparatus for measuring, characterizing and/or altering a composition of a sample. The apparatus comprises an anode compartment having an anode and a cathode compartment having a cathode. The anode and cathode are spaced at a distance from one another to define an electric field having a direction along a longitudinal axis, and between the anode and cathode compartments can be at least one separation compartment. Each compartment includes means for adding or removing a solution, a first dimension orthogonal to the direction of the electric field, a second dimension orthogonal to the electric field and the first dimension, and a third dimension parallel to the electric field and orthogonal to the first and second dimensions. A ratio of the first and second dimensions define an aspect ratio, at least one aspect ratio being less than one. An ion-permeable barrier is positioned between each compartment to prevent convective mixing therebetween. At least one of the compartments can be made of an electrically insulating material having a thermal conductivity greater than about 1 W/mK and a specific heat greater than about 100 J/kgK.

WO 2005/040782 A1